

CUSTOMER NOTIFICATION

ZUD-CD-06-0113 (1/13)

June 23, 2006

Koji Nishibayashi, Group Manager
Development Tool Group
Multipurpose Microcomputer Systems Division
4th Systems Operations Unit
NEC Electronics Corporation

CP(K), O

78K0R IECUBE Utility
IEQBUTL V2.11
User's Manual

Be sure to read this document before using the product.

CONTENTS

1. Overview of IEQBUTL	3
1.1 Introduction	3
1.2 Details of Functions	3
2. Installation and Startup	4
2.1 How to Install IEQBUTL	4
2.2 How to Start IEQBUTL	4
2.3 Explanation of Each Area	4
3. IECUBE Self-Testing Function	5
3.1 Explanation of Each Area	5
3.2 Execution of Self-Testing	6
3.3 Log File	8
3.4 If Error Occurs During Self-Testing	9
3.4.1 Operation when error occurs during self-testing	9
3.4.2 Error messages and action	10
4. F/W Download Function	11
5. FPGA Download Function	12
6. Version Confirmation	13
7. Revision History	13

1. Overview of IEQBUTL

This section explains the IECUBE utility (hereafter referred to as IEQBUTL) and its functional overview.

1.1 Introduction

IEQBUTL is an application that performs IECUBE self-testing and upgrade of firmware and FPGA data.

Use IEQBUTL mainly for IECUBE self-testing. Note that IECUBE may not operate normally if the upgrade function of firmware and FPGA data is used during ordinary operation.

1.2 Details of Functions

The following functions are provided in IEQBUTL. The functional overview is described below.

◆ Self-testing function

IEQBUTL performs the following access tests for abnormality in IECUBE.

- IECUBE register test

Checks the initial value of the register controlling the IECUBE emulation function and performs a read/write test.

- IROM test

Performs an internal ROM read/write test.

- IRAM test

Performs an internal RAM read/write test.

- Trace memory test

Performs a trace memory read/write test.

- Coverage memory test

Performs a coverage memory read/write test.

- CPU register test

Performs a microcontroller general-purpose register read/write test.

◆ F/W download function

This function is used for upgrading the firmware program of the internal flash memory of the USB control microcontroller inside IECUBE. Do not use this function in ordinary operation; otherwise IECUBE may not operate normally.

◆ FPGA download function

This function is used for upgrading FPGA configuration data of the FPGA flash memory incorporated in the boards in IECUBE. Do not use this function in ordinary operation; otherwise IECUBE may not operate normally.

2. Installation and Startup

This section explains how to install and startup IEQBUTL.

2.1 How to Install IEQBUTL

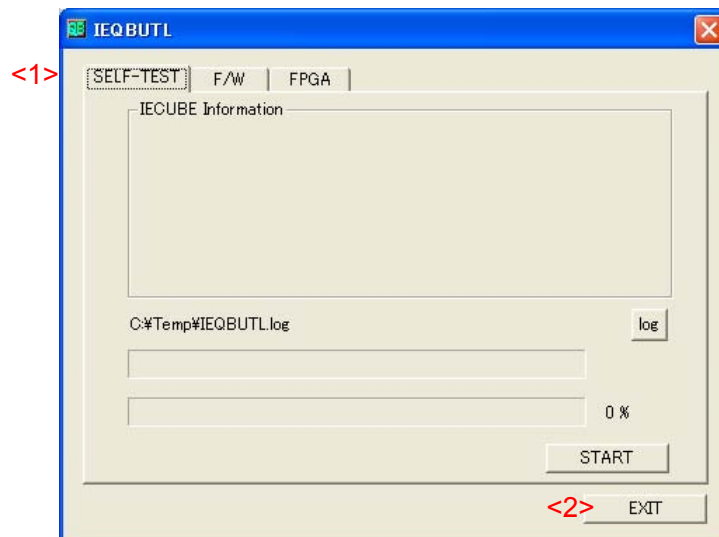
IEQBUTL is automatically installed when the ID78K0R-QB is installed.

2.2 How to Start IEQBUTL

Click the Windows [Start] menu, point to [Programs], [NEC Electronics Tools], [Latest Version], and then click [ID78K0R-QB V3.20 IECUBE Diagnostic Utility].

2.3 Explanation of Each Area

When IEQBUTL is started, a window with three tabs for switching three functions is displayed.



<1> SELF-TEST, F/W, and FPGA tabs

The self-testing, firmware download, and FPGA download functions can be switched.

<2> EXIT button

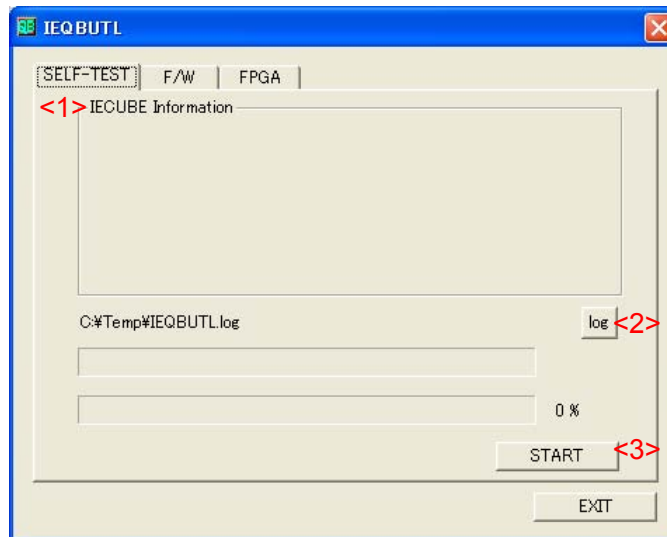
Terminates IEQBUTL.

3. IECUBE Self-Testing Function

This section explains how to use the self-testing function.

3.1 Explanation of Each Area

The following window is displayed by clicking the SELF-TEST tab. Explanation of each area is described below.



<1> IECUBE Information area

Displays the IECUBE hardware information.

<1> log button

When this button is clicked, the path for the log file can be changed. When self-testing has not been performed, IEQBUTL.log is displayed by default.

<1> START button

When this button is clicked, a confirmation dialog box appears and self-testing is started by clicking the [OK] button.

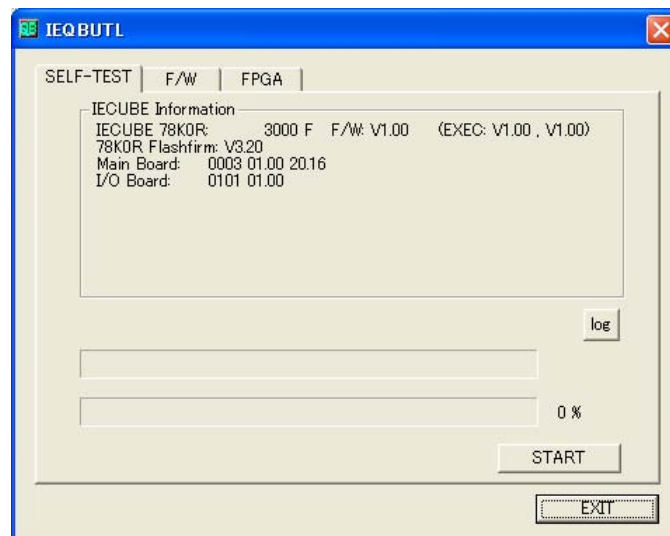
3.2 Execution of Self-Testing

Note the following points when executing the self-testing function.

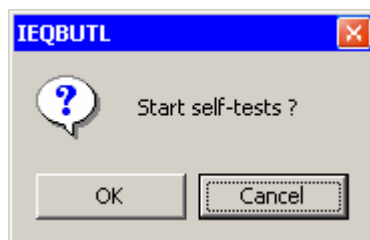
- **Do not connect IECUBE to the target system.**
- **Terminate the ID78K0R-QB and any other NEC Electronics debugger.**

Execute self-testing using the following procedure.

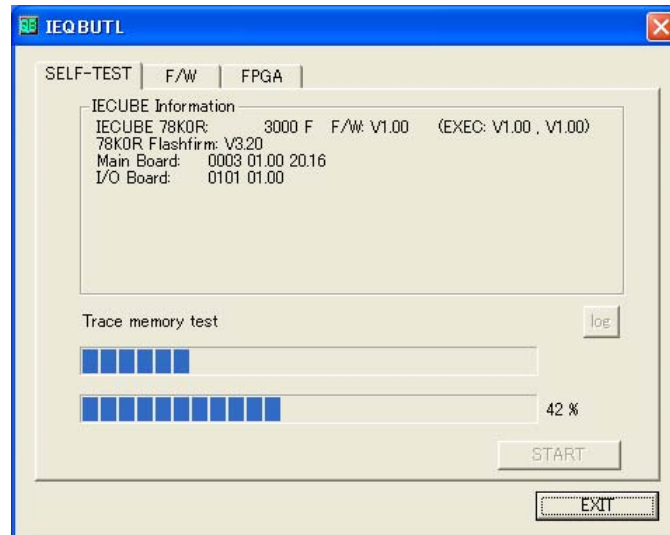
- (1) Specify the location in which the log file will be saved by clicking the [log] button. The self-testing result will be output to this log file. Refer to **3.3 Log File** for descriptions on the log file.
- (2) When the [START] button is clicked, IEQBUTL checks the IECUBE connection status and displays the hardware information in the "IECUBE Information" field.



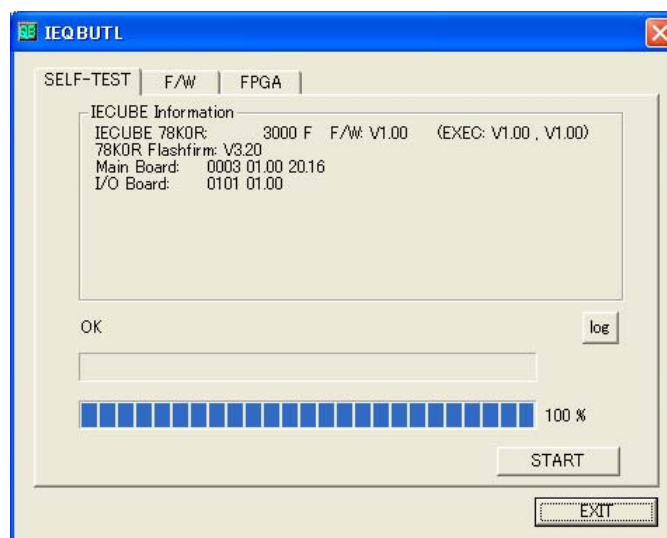
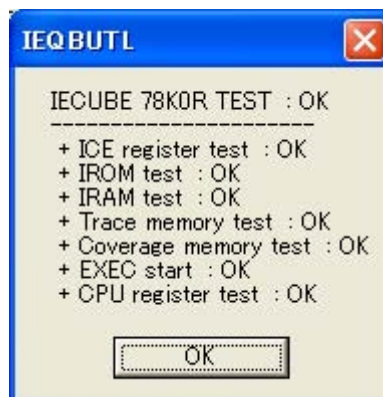
- (3) A dialog box to confirm whether or not to start self-testing is displayed.



- (4) Self-testing is started by clicking the [OK] button. The upper progress bar indicates the progress status of the test currently being performed. The lower progress bar indicates the status of progress for overall self-testing. It will take about five minutes until self-testing is completed.



- (5) When all the tests are complete, the final result dialog box is displayed as shown below. The final result is output to a log file that is automatically created by clicking the [OK] button, self-testing is then terminated. If an error occurs during self-testing, see **3.4 If Error Occurs During Self-Testing** and take relevant action.



3.3 Log File

After self-testing is performed, a log file is created to hold the result. The log file is overwritten each time self-testing is performed. The format and the location for saving the log file are described below.

- Format of log file

The following shows an example of the log file.

----- Log file example -----

== 6/23/2006 15:11:51 Test start. ==

IECUBE 78K0R: 3000 F F/W: V1.00 (EXEC: V1.00 , V1.00)

78K0R Flashfirm: V3.20

Main Board: 0003 01.00 20.16

I/O Board: 0101 01.00

-- 15:11:51 + ICE register test

-- 15:12:02 +- OK

-- 15:12:02 + IROM test

-- 15:14:02 +- OK

-- 15:14:02 + IRAM test

-- 15:14:10 +- OK

-- 15:14:10 + Trace memory test

-- 15:16:47 +- OK

-- 15:16:47 + Coverage memory test

-- 15:16:58 +- OK

-- 15:16:58 + EXEC start

-- 15:16:58 +- OK

-- 15:16:58 + CPU register test

-- 15:17:03 +- OK

OK

- Specification of location for saving log file

The location for saving the log file can be changed by clicking the [log] button. The log file is created as "IEQBUTL.LOG" in a temporary directory by default. Normally, the temporary

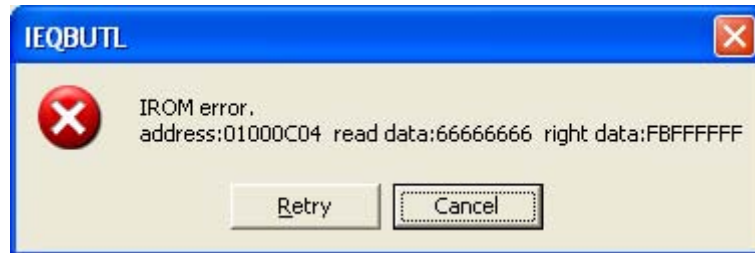
directory is specified in the tmp or temp environmental variable.

3.4 If Error Occurs During Self-Testing

This section explains the operation when an error occurs during self-testing, error messages, and relevant actions for handling the error.

3.4.1 Operation when error occurs during self-testing

A dialog box like that shown below is displayed if an error occurs during self-testing.

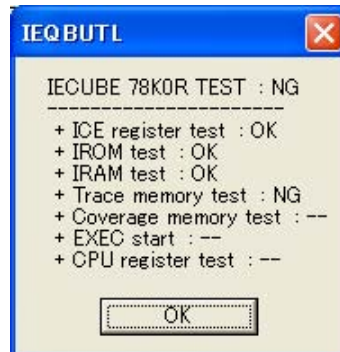


If the [Retry] button is clicked, the test for the item for which an error was detected will be resumed. If the [Cancel] button is clicked, the test for that item is terminated and the following dialog box is displayed.



If the [Yes] button is clicked, the next item is tested. If the [No] button is clicked, the subsequent items are not tested and self-testing is terminated.

If an error is detected, "NG" is displayed for the item for which an error was detected in the final result dialog box, as shown below. If testing is canceled, "--" is displayed for the items that have not been tested.



3.4.2 Error messages and action

The errors that may occur during self-testing and relevant actions for handling the errors are listed below.

No.	Error No.	Error Message and Action
1	F0002	[DLL file not found. Stop this self-test.]
		Confirm that IEQBUTL.EXE, the executable file of the diagnostic tool, is installed in the folder in which the ID78K0R-QB is installed.
2	F0c00	[Monitor file not found. Stop this self-test.]
		Confirm that IEQBUTL.EXE, the executable file of the diagnostic tool, is installed in the folder in which the ID78K0R-QB is installed.
3	F0100	[Connection of emulator cannot be performed. Stop this self-test.]
		Confirm that the host machine is connected to IECUBE, and power to IECUBE is on. In addition, confirm that the USB driver is installed normally.
4	F0c43	[ICE register cannot be accessed. Continue the next test?]
		Confirm that the host machine is connected to IECUBE, and power to IECUBE is on. In addition, confirm that the USB driver is installed normally.
5	F01a6	[EXEC already work. Stop this self-test.] The ID78K0R-QB is running. Terminate the ID78K0R-QB.

No.	Error Message and Action
6	[Is this ICE connected the target board?]
	This message is displayed when the target is connected. Click the [Yes] button, disconnect the target, and retry execution.
7	[Target connector check function error. Continue the next test?]
	This message is displayed when the target is connected. Click the [Yes] button, disconnect the target, and retry execution.

If an error message other than above is displayed, the cause may be a defect in IECUBE.

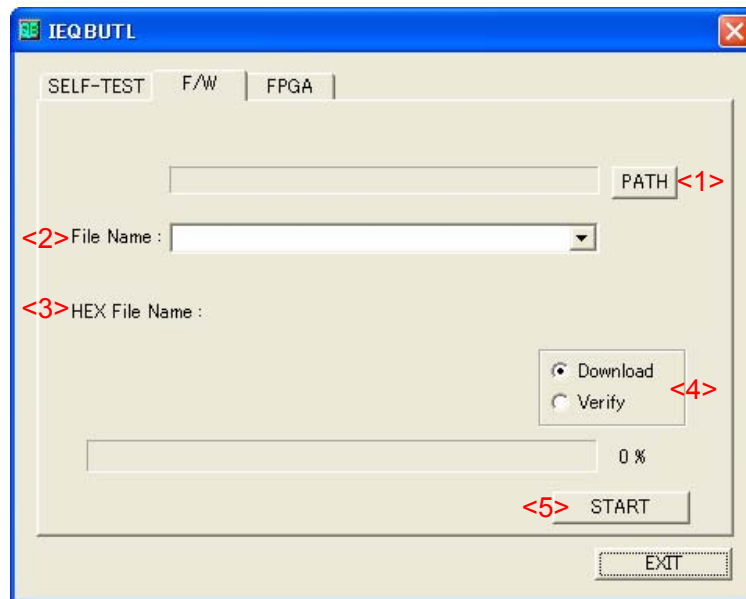
In addition, if the same error message is displayed even after the above action is implemented, the cause may be a defect in IECUBE. **Consult an NEC Electronics sales representative or distributor.**

4. F/W Download Function

This function is used for upgrading the firmware program of the internal flash memory of the USB control microcontroller inside IECUBE.

Do not use this function in ordinary operation; otherwise IECUBE may be damaged.

Details of each area in the window are explained below.



<1> PATH button

The File dialog box is opened by clicking this button. Specify the path to the folder in which the file to be downloaded is placed. The specified path is displayed in the text box.

<2> File Name drop-down list

Select the HEX file to be downloaded from the drop-down list. The HEX files placed in the folder specified by the above path are displayed in the drop-down list.

<3> HEX File Name

The HEX file to be downloaded is displayed.

<4> Download/Verify radio buttons

HEX file can be downloaded by selecting "Download".

Whether the HEX file to be downloaded and firmware already written match can be checked by selecting "Verify".

<5> START button

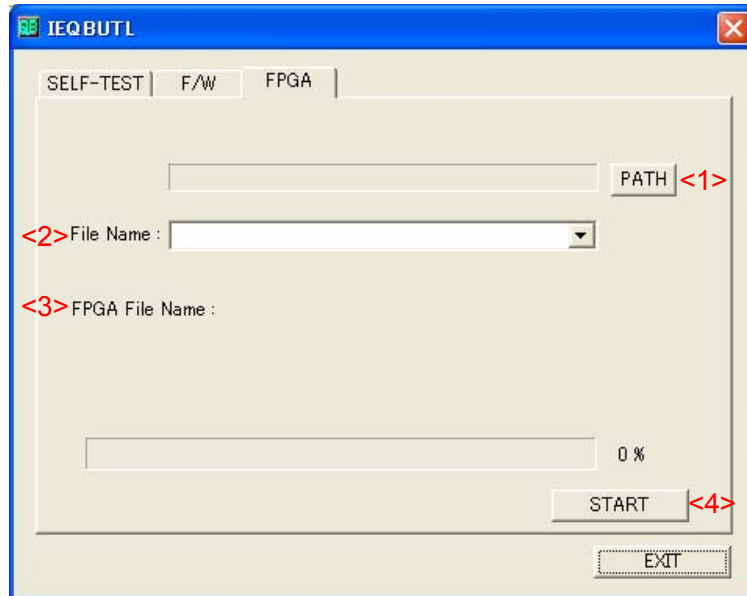
When this button is clicked, a confirmation dialog box appears and the downloading is started by clicking the [OK] button.

5. FPGA Download Function

This function downloads FPGA configuration data of the FPGA flash memory.

Do not use this function in ordinary operation; otherwise IECUBE may be damaged.

Details of each area in the window are explained below.



<1> PATH button

The File dialog box is opened by clicking this button. Specify the path to the folder in which the file to be downloaded is placed. The specified path is displayed in the text box.

<2> File Name drop-down list

Select the XSVF file to be downloaded from the drop-down list. The XSVF files placed in the folder specified by the above path are displayed in the drop-down list.

<3> FPGA File Name

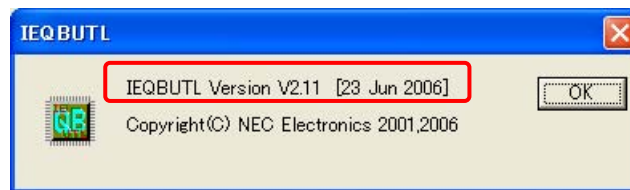
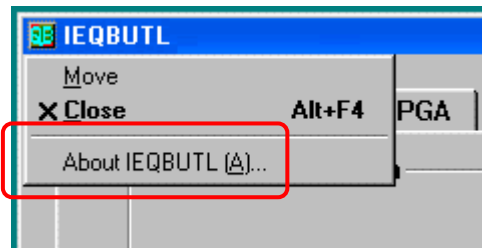
The XSVF file to be downloaded is displayed.

<4> START button

When this button is clicked, a confirmation dialog box appears and the downloading is started by clicking the [OK] button.

6. Version Confirmation

The system menu is displayed by left-clicking the icon on the title bar or by right-clicking the title bar.



7. Revision History

Document Number	Issued on	Version	Description
ZUD-CD-06-0113	June 23, 2006	V2.11	Newly created.